Fall 2005 Math 152
Exam 1 Review Exercises
Solutions

courtesy: Amy Austin (covering Sections 6.5 - 8.4)

Review Exercises: Sections 6.5 - 8.4

1. $\frac{3}{4}\ln 3$
2. $\frac{1}{24}(4x^4-9)^{\frac{3}{2}}+C$
3. $\frac{-1}{3}e^{1-x^3}+C$
4. $\frac{-1}{2}\cos(x^2-2)+C$
5. a.) $A=4.5$
   b.) $A=4.5$
   c.) $A=2\sqrt{2}$
6. $\frac{4\pi}{21}$
7. 8π
8. 8π
9. $\frac{5\pi}{6}$
10. $\frac{8\sqrt{3}}{3}$
11. 75/16 ft-lbs or 4.6875 ft-lbs
12. a.) $54\pi\rho g$ J
    b.) $144\rho g$ J
    c.) $7\pi\rho g$ J
13. 650,000 ft-lbs
14. $f_{ave}=2$, $c=1$ and $c=-1$
15. $\frac{x^3\ln x}{3}-\frac{x^3}{9}$+C
16. $\frac{1}{9}(1-4e^{-3})$
17. $\frac{1}{2}x\sin(2x)+\frac{1}{4}\cos(2x)+C$
18. $x\sin^{-1}x+\sqrt{1-x^2}+C$
19. $\frac{x^3e^{x^3}-e^{x^3}}{3}+C$
20. $\sin x\ln(\sin x)-\sin x+C$
21. $\frac{\sin^3 x}{3}-\frac{\sin^5 x}{5}+C$
22. $\frac{8}{15}$
23. $-\cos x+\frac{2}{3}\cos^3 x-\frac{1}{5}\cos^5 x+C$
24. $\frac{1}{2}x+\frac{1}{16}\sin 8x+C$
25. $-\ln|\cos x|+\frac{1}{2}\cos^2 x+C$
26. $\frac{\sec^7 x}{7}-\frac{2\sec^5 x}{5}+\frac{\sec^3 x}{3}+C$
27. If you convert to sin and cos integral:
    $-\frac{1}{6\sin^6 x}+\frac{1}{4\sin^4 x}+C$
    If you keep as is:
    $-\frac{1}{4\tan^4 x}-\frac{1}{6\tan^6 x}+C$
28. $\frac{1}{2}(\sec x\tan x+\ln|\sec x+\tan x|)+C$
29. $-\frac{\sqrt{1-x^2}}{x}+C$
30. $\frac{162}{5}(\sqrt{2}+1)$
31. $\frac{2}{3}\left(\arcsin(\frac{3x}{2})+\frac{3x}{4}\sqrt{4-9x^2}\right)+C$
32. $\ln\left(\frac{x+2}{2}+\frac{\sqrt{x^2+4x}}{2}\right)+C$
33. $2\sqrt{2}-2\ln(\sqrt{2}+1)$
34. $\frac{1}{3}\ln\left(\frac{8}{5}\right)$
35. $\frac{1}{4}\ln|x+2|+\frac{3}{4}\ln|x-2|+C$
36. $\ln|x|+\frac{1}{2}\ln(x^2+4)-\frac{1}{2}\arctan(\frac{x}{2})+C$